



NOTES

MALIGNANT TUMORS

GENERALLY, WHAT ARE THEY?

PATHOLOGY & CAUSES

- Malignant cutaneous lesions due to abnormal/uncontrolled growth of epithelial cells

SIGNS & SYMPTOMS

- $\geq$ one multiple visible cutaneous tumors
- Melanoma can present noncutaneously (e.g. ocular, mucosal)

DIAGNOSIS

LAB RESULTS

Histological analysis

- Confirms diagnosis, establishes tumor grade

Biopsy

- Confirms diagnosis, establishes tumor grade

OTHER DIAGNOSTICS

- Dermatological examination with dermatoscope, TNM staging
- Breslow thickness
 - Distance of tumor cell from basal layer of epidermis

BRESLOW DEPTH AS SURVIVAL PREDICTOR

BRESLOW DEPTH	5 YEAR SURVIVAL
<i>In situ</i>	95-100%
< 1mm	95-100%
1-2 mm	80-96%
2.1-4 mm	60-75%

TREATMENT

MEDICATIONS

- Immunomodulators

SURGERY

- Surgical excision
- Electrodesiccation, curettage of lesion

OTHER INTERVENTIONS

- Radiation therapy

VISIT...

LANZAROTE
Caliente.COM

BASAL-CELL CARCINOMA

osms.it/basal-cell_carcinoma

PATHOLOGY & CAUSES

- Most common type of skin cancer; emerges from basal cells found in lower epidermis
- Slow growing, can infiltrate surrounding tissue, rarely metastasizes

TYPES

Nodular

- Pearly circular cystic pigmented nodule

Infiltrative

- Invades dermis

Micronodular

- Solid white-coloured lesion

Morpheaform

- Flat white-yellowish waxy lesion

Superficial

- Erythematous plaque, usually on upper trunk



Figure 5.1 The clinical appearance of a basal-cell carcinoma on the nose of an elderly individual. The tumor is nodular with central ulceration and pearly borders.

CAUSES

- UV radiation: direct DNA damage (pyrimidine dimers) → alters DNA structure → mutations, carcinogenesis if tumor suppressor gene involved
- Gorlin syndrome: numerous basal cell carcinomas due to mutation of *PTCH1* gene

RISK FACTORS

- Arsenic exposure; immunodeficiency; fair skin, albinism; xeroderma pigmentosum; risk increases with age; high exposure to UV radiation

SIGNS & SYMPTOMS

- Presents on face, periocular, neck, scalp (i.e. sun-exposed areas)
- Newly discovered lesion
 - Pearly elevated patch of skin
- Does not heal within four weeks
- Dimpled at midpoint
- Grows slowly
- May bleed (esp. when poked/knocked)
- Painless, may itch
- Dilated blood vessels (telangiectasia)
- Ulcerated lesion
 - Brown-black pigmentation in crater of lesion

DIAGNOSIS

LAB RESULTS

Skin biopsy/histopathology

- Basal cells form clusters called islands with peripheral palisading nuclei



Figure 5.2 The histological appearance of a basal-cell carcinoma. Malignant dark-staining, basaloid cells infiltrate the dermis. There is clefting at the junction between the tumor and the dermis.

TREATMENT

MEDICATIONS

- Topical 5-fluorouracil/imiquimod

SURGERY

- Electrodesiccation, curettage; complete surgical excision; cryosurgery; Mohs surgery

OTHER DIAGNOSTICS

- Radiation, photodynamic therapy

OTHER DIAGNOSTICS

- Dermatoscopy
 - Scattered vascular pattern, telangiectasias, hemorrhage-ulceration, hypopigmented areas with blue-grey ovoid nests, red dots/globules

MELANOMA

osms.it/melanoma

PATHOLOGY & CAUSES

- Malignant skin cancer, arises from melanocytes
- Occurs most commonly on skin
 - *Rarely*: mouth, eyes, gastrointestinal (GI) tract
- Can arise from
 - Preexisting mole
 - *De novo lump*: nodular melanoma (most dangerous)

Variants

- Superficial spreading melanoma
- Lentigo maligna melanoma
- Nodular melanoma
- Acral lentiginous melanoma

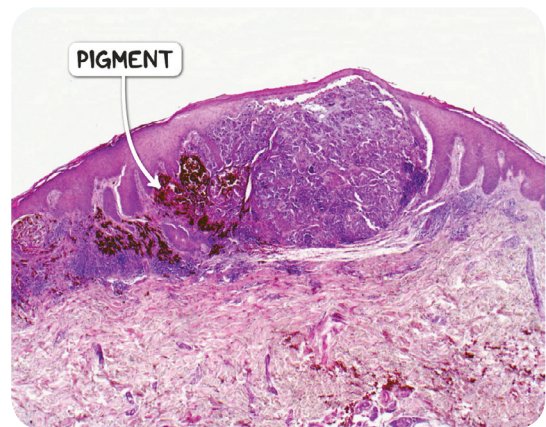


Figure 5.3 A malignant melanoma exhibiting pigment production.

Growth phases

- Radial growth phase (< 1mm thick)
 - Grows laterally along epidermis, superficial dermis; does not spread
 - Rarely metastasizes; good prognosis if detected
- Vertical growth phase (> 1mm thick)
 - Grows deeper into dermis, beyond
 - Invasive, able to metastasize through lymph/blood vessels

CAUSES

- DNA damage caused by ultraviolet (UV) light exposure (e.g. sun, tanning beds)
- Genetic mutations in MC1R, CDKN2A, BRAF genes

RISK FACTORS

- Immunosuppression
- Numerous moles
- Family history of melanoma
- Syndromes
 - Dysplastic nevus syndrome, xeroderma pigmentosum, albinism, Gorlin syndrome
- Exposure/overexposure to UV light (e.g. sun, tanning beds)
 - Esp. if blistering/occurring early in life; more common in people with fair skin

COMPLICATIONS

- Metastases most commonly to lymph nodes, skin, subcutaneous tissue → lungs, liver, brain

SIGNS & SYMPTOMS

- New skin lesion/change pre-existing lesion: color, shape, size irregularities; ulcerations, pruritus, bleeding
- Nausea, vomiting, loss of appetite, fatigue

DIAGNOSIS**LAB RESULTS****Full-thickness, sentinel node biopsy**

- Tumor staging

- See tables: American Joint Committee on Cancer Guideline for TMN staging of melanoma
- Histopathological evaluation for tumor grade

OTHER DIAGNOSTICS

- Dermatological examination using dermatoscope
 - Classic melanoma: mnemonic ABCDE
 - Nodular melanoma: mnemonic EFG

**MNEMONIC: ABCDE****Appearance of classic melanoma**

Asymmetry
Border irregularities
Color variation
Diameter: 6 mm
Enlargement

**MNEMONIC: EFG****Appearance of nodular melanoma**

Elevated
Firm to touch
Growing



Figure 5.4 The clinical appearance of a malignant melanoma. It is darkly pigmented with an irregular border.

PRIMARY TUMOR (T)

T CATEGORY	THICKNESS
T0: no evidence of primary tumor	0
Tis (melanoma <i>in situ</i>)	N/A
T1	≤ 1 mm
T2	> 1-2 mm
T3	> 2-4 mm
T4	> 4 mm

REGIONAL LYMPH NODES (N)

N CATEGORY	# OF TUMOR-INVOLVED REGIONAL LYMPH NODES
N0	No regional metastases detected
N1	1
N2	2-3
N3	≥ 4

DISTANT METASTASIS (M)

M CATEGORY	ANATOMIC SITE	LACTATE DEHYDROGENASE (LDH) LEVEL
M0	No evidence of distant metastasis	N/A
M1a	Metastasis to skin, soft tissue (e.g. muscle/nonregional lymph node)	M1a(0): ↓ LDH M1a(1): ↑ LDH
M1b	Metastasis to lung	M1b(0): ↓ LDH M1b(1): ↑ LDH
M1c	Metastasis to non-central nervous system (CNS) visceral sites	M1c(0): ↓ LDH M1c(1): ↑ LDH
M1d	Metastasis to CNS	M1d(0): no change M1b(1): ↑ LDH

TREATMENT

MEDICATIONS

- Immunotherapy in case of metastases

SURGERY

- Surgical excision
 - Wide margin excision (1–3cm of normal tissue depending on depth of invasion)
- Excision if sentinel node biopsy is positive

OTHER INTERVENTIONS

- Early detection for good prognosis (depends directly on depth of invasion)
- Radiation/chemotherapy in case of metastases

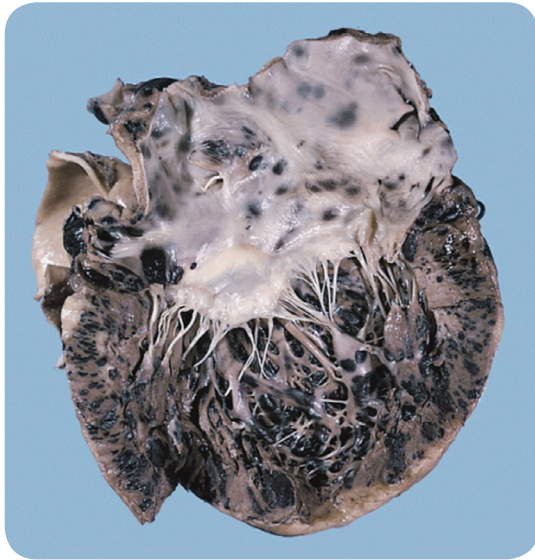


Figure 5.5 The gross pathology of the heart in a case of metastatic melanoma.

SQUAMOUS-CELL CARCINOMA (SCC)

osms.it/squamous-cell_carcinoma

PATHOLOGY & CAUSES

- Second most common type of skin cancer
- Epidermal keratinocytes acquire anti-apoptotic properties → frequent mitosis

CAUSES

- UV radiation (e.g. sun, tanning beds)
- HPV infection
- Genetic mutations
 - Deletion of tumor progression locus 2 (Tp12) gene
- Preceding skin lesions (e.g. actinic keratosis, other melanomas)
 - Actinic keratosis: precancerous skin lesion; rough, scaly patch caused by chronic, long-term sun exposure
- Bowen's disease (AKA squamous cell carcinoma *in situ*)

RISK FACTORS

- Immunosuppression, chronic UV exposure, fair skin, albinism, xeroderma pigmentosa, tobacco use (increases risk of lip/oral SCC), arsenic exposure (rare)



Figure 5.6 An ulcerated squamous cell carcinoma on the nose of a middle-aged individual.

COMPLICATIONS

- Significant risk of metastasis

SIGNS & SYMPTOMS

- Most commonly found on sun-exposed areas (e.g. head, nose, neck)
- Small rough scaly nodule (slow growing)
 - Nodule expands → center necroses → evolves into ulcer covered by red growing plaque → frequently scales, easily bleeds
- Chronic draining sinuses

DIAGNOSIS

DIAGNOSTIC IMAGING

CT scan

- Assess surrounding tissue invasion (soft tissue, bones, lymph nodes), metastasis

Dermatoscopy, excisional/incisional biopsy of subcutaneous tissue

- *Microscopic features*: hyperkeratosis, nuclear atypia
- See tables: American Joint Committee on Cancer Guideline for TMN staging of cutaneous squamous-cell carcinoma

MRI

- Evaluate vital structures (neural, vascular invasions)

TREATMENT

MEDICATIONS

- Topical immunomodulators

SURGERY

- Surgical excision
- *Mohs surgery*: microscopic procedure removing thin layers of affected tissue, examining under microscope until cancer-free tissue reached
- Electrodesiccation, curettage

OTHER INTERVENTIONS

- Chemotherapy, radiotherapy, photodynamic therapy

PRIMARY TUMOR (T)

T CATEGORY	T CRITERIA
Tis	Carcinoma in situ
T1	< 2 cm in greatest dimension
T2	2-4 cm
T3	> 4 cm
T4	Tumor with gross cortical bone/marrow/skull invasion

REGIONAL LYMPH NODES (N)

N CATEGORY	# OF TUMOR-INVOLVED REGIONAL LYMPH NODES
N0	No regional metastases detected
N1	1 ipsilateral node ≤ 3 cm
N2	1 ipsilateral node 3-6 cm
N3	Metastasis in lymph node > 6 cm

DISTANT METASTASIS (M)

M CATEGORY	ANATOMIC SITE
M0	No evidence of distant metastasis
M1	Distant metastasis



Figure 5.7 The histological appearance of well-differentiated squamous cell carcinoma of the skin. It is composed of polygonal cells with eosinophilic cytoplasm which produce keratin pearls.